

WHAT IS CLAIMED IS

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1. An image forming apparatus, comprising:
 - a plurality of hardware resources provided to carry out image formation;
 - a plurality of application programs performing respective processing of the plurality of hardware resources related to the image formation;
 - a storage device storing rewritable shared data which is used by the plurality of application programs in common; and
 - a shared-data control unit suspending one of a write-lock request or a read-lock request that is received from one of the plurality of application programs when acquisition and/or updating of the shared data is inhibited, and after the acquisition and/or updating of the shared data is allowed the shared-data control unit inhibiting the acquisition and/or updating of the shared data by other application programs than said one of the plurality of application programs in accordance with the suspended one of the write-lock request or the read-lock request for said one of the plurality of application programs.

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2. The image forming apparatus according to claim 1 wherein
the shared-data control unit suspends a write-lock request that is
received from a first application program of the plurality of
application programs when acquisition and updating of the shared
5 data is inhibited, and notifies a start of the updating of the shared
data to the first application program in accordance with the
suspended write-lock request after the acquisition and the updating
of the shared data is allowed, and the shared-data control unit
inhibiting the acquisition and the updating of the shared data by
10 other application programs than the first application program during
the updating of the shared data by the first application program.

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3. The image forming apparatus according to claim 2 wherein,
when an unlock request is received from the first application
program after the start of the updating of the shared data by the first
application program is notified, the shared-data control unit allows
20 the acquisition and the updating of the shared data and notifies an
end of the updating of the shared data by the first application
program to the plurality of application programs including the first
application program.

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4. The image forming apparatus according to claim 1 wherein
the shared-data control unit suspends a write-lock request that is
received from a first application program of the plurality of
application programs when updating of the shared data is inhibited,
5 and notifies a start of the updating of the shared data to the first
application program in accordance with the suspended write-lock
request after the updating of the shared data is allowed, and the
shared-data control unit inhibiting acquisition and updating of the
shared data by other application programs than the first application
10 program during the updating of the shared data by the first
application program.

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5. The image forming apparatus according to claim 4 wherein,
when an unlock request is received from the first application
program after the start of the updating of the shared data by the first
application program is notified, the shared-data control unit allows
20 the acquisition and the updating of the shared data and notifies an
end of the updating of the shared data by the first application
program to the plurality of application programs including the first
application program.

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6. The image forming apparatus according to claim 1 wherein
the shared-data control unit suspends a read-lock request that is
received from a first application program of the plurality of
application programs when acquisition and updating of the shared
5 data is inhibited, and after the acquisition and the updating of the
shared data is allowed the shared-data control unit inhibiting the
updating of the shared data by other application programs than the
first application program in accordance with the suspended read-lock
request during the acquisition of the shared data by the first
10 application program.

15 7. The image forming apparatus according to claim 6 wherein
the shared-data control unit is provided to supply the shared data in
response to a request from the plurality of application programs
after the updating of the shared data is inhibited by the suspended
read-lock request.

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25 8. The image forming apparatus according to claim 1 wherein,
when updating of the shared data is inhibited by a read-lock request

previously received from one of the plurality of application programs and a subsequent write-lock request is received from said one of the plurality of application programs, the shared-data control unit allows updating of the shared data by said one of the plurality of application programs and inhibits acquisition and updating of the shared data by other application programs than said one of the plurality of application programs in accordance with the received write-lock request.

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9. The image forming apparatus according to claim 8 wherein, after the acquisition and updating of the shared data by the other application programs is inhibited by the received write-lock request, the shared-data control unit notifies a start of the updating of the shared data by said one of the plurality of application programs to the plurality of application programs, and when an unlock request corresponding to the received write-lock request is received from said one of the plurality of application programs, the shared-data control unit allows acquisition and updating of the shared data and notifies an end of the updating of the shared data to the plurality of application programs.

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10. The image forming apparatus according to claim 8 wherein
the shared-data control unit is provided to omit receiving of an
unlock request corresponding to the previous read-lock request from
said one of the plurality of application programs.

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11. The image forming apparatus according to claim 1 wherein,
10 when acquisition and updating of the shared data is inhibited by a
write-lock request previously received from one of the plurality of
application programs and a subsequent read-lock request is received
from said one of the plurality of application programs, the shared-
data control unit allows acquisition of the shared data by said one of
15 the plurality of application programs and inhibits updating of the
shared data by other application programs than said one of the
plurality of application programs in accordance with the received
read-lock request.

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12. The image forming apparatus according to claim 11
wherein, after the acquisition and updating of the shared data by the
25 other application programs is inhibited by the received write-lock

request, the shared-data control unit notifies a start of the updating of the shared data by said one of the plurality of application programs to the plurality of application programs, and after the updating of the shared data by the other application programs is
5 inhibited by the received read-lock request, the shared-data control unit notifies an end of the updating of the shared data to the plurality of application programs.

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13. The image forming apparatus according to claim 11 wherein the shared data control unit is provided to omit receiving of an unlock request corresponding to the previous write-lock request
15 from said one of the plurality of application programs.

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14. An image forming apparatus, comprising:
a plurality of hardware resources provided to carry out image formation;
a plurality of application programs performing respective processing of the plurality of application programs related to the
25 image formation;

a storage device storing rewritable shared data which is used by the plurality of application programs in common; and

5 a shared-data control unit selecting any of the plurality of application programs as destinations of updating-start notification and notifying a start of updating of the shared data to the selected application programs when acquisition and updating of the shared data is inhibited in response to a write-lock request received from one of the plurality of application programs, and the shared-data control unit notifying an end of the updating of the shared data to

10 the selected application programs when the acquisition and updating of the shared data is allowed in response to an unlock request received from said one of the plurality of application programs.

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15. The image forming apparatus according to claim 14 wherein the shared data control unit selects as the destinations of updating-start notification any of the plurality of application programs that are provided to display the shared data on a displaying device.

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16. The image forming apparatus according to claim 15
wherein the displaying device is an operation panel which is
provided to display operational messages to an operator and receive
input operational commands from the operator.

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17. The image forming apparatus according to claim 14
10 wherein the shared-data control unit selects as the destinations of
updating-start notification any of the plurality of application
programs that are provided not to read out the shared data from the
storing device upon starting of the image forming apparatus.

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18. The image forming apparatus according to claim 14
wherein, when acquisition and updating of the shared data is
20 inhibited and a read-lock request is received from one of the
plurality of application programs to which a start of the updating of
the shared data is not yet notified, the shared data-control unit
notifies the start of the updating of the shared data to said one of the
plurality of application programs and rejects acquisition of the
25 shared data in response to the received read-lock request.

19. The image forming apparatus according to claim 14
wherein, when acquisition and updating of the shared data is
inhibited and an application use request is received from one of the
plurality of application programs to which a start of the updating of
5 the shared data is not yet notified, the shared data control unit
notifies the start of the updating of the shared data to said one of the
plurality of application programs.

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20. The image forming apparatus according to claim 14
wherein, after the end of the updating of the shared data is notified
to the selected application programs, the shared-data control unit
15 inhibits updating of the shared data in response to a read-lock
request received from any of the selected application programs to
which the the end of the updating of the shared data is notified.

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21. The image forming apparatus according to claim 14
wherein the shared-data control unit is provided to include
additional information, indicating that the updating of the shared
25 data is not performed, in the updating-end notification which

notifies the end of the updating of the shared data to the selected application programs.

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22. An image forming apparatus, comprising:
a plurality of hardware resources provided to carry out image formation;

a plurality of application programs performing respective processing of the plurality of hardware resources related to the image formation;

a storage device storing rewritable shared data which is used by the plurality of application programs in common; and

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a shared-data control unit inhibiting, prior to receiving inputs of an operator into one of the plurality of application programs, acquisition and updating of the shared data by other application programs than said one of the plurality of application programs, and notifying a start of updating of the shared data by said one of the plurality of application programs to the plurality of application programs, and

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the shared-data control unit allowing the acquisition and updating of the shared data in response to an unlock request received from said one of the plurality of application programs, and notifying 25 an end of the updating of the shared data by said one of the plurality

of application programs to the plurality of application programs.

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23. The image forming apparatus according to claim 22
wherein the shared-data control unit is provided to include
additional information, indicating contents of the updating of the
shared data, into the updating-end notification that notifies the end
10 of the updating of the shared data to the plurality of application
programs.

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24. The image forming apparatus according to claim 23
wherein the plurality of application programs, which receive the
additional information included in the updating-end notification
from the shared-data control unit, send a read-lock request to the
20 shared-data control unit based on the received addition information.

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25. The image forming apparatus according to any of claims 1,

14, and 22 wherein the shared-data control unit is provided to receive at least one of an acquisition start request, an acquisition end request, an updating start request and an updating end request from an external network device.

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10 26. The image forming apparatus according to any of claims 1, 14, and 24 wherein the shared data comprises destination address data which are used by the plurality of application programs in common.

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20 27. The image forming apparatus according to any of claims 1, 14, and 22 wherein the plurality of application programs include at least one of a scanner application program and a fax application program which use the shared data.

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28. The image forming apparatus according to claim 22

wherein, when one of a read-lock request or a write-lock request is received from a first application program of the plurality of application programs during a power-saving mode of the image forming apparatus, the shared-data control unit determines whether 5 the first application program is the same as a source application program that has sent a power-saving mode setting inquiry to the shared-data control unit, and rejects said one of the read-lock request or the write-lock request when the first application program is determined as being the same as the source application program.

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29. A shared data management method for an image forming apparatus which includes a plurality of hardware resources provided to carry out image formation, a plurality of application programs performing respective processing of the plurality of hardware resources related to the image formation, and a storage device storing rewritable shared data which is used by the plurality of 15 application programs in common, the method comprising the steps of:

suspending one of a write-lock request or a read-lock request that is received from one of the plurality of application programs when acquisition and/or updating of the shared data is inhibited; and 20 inhibiting, after the acquisition and/or updating of the shared

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data is allowed, the acquisition and/or updating of the shared data by other application programs than said one of the plurality of application programs in accordance with the suspended one of the write-lock request or the read-lock request for said one of the plurality of application programs.

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10 30. A shared data management method for an image forming apparatus which includes a plurality of hardware resources provided to carry out image formation, a plurality of application programs performing respective processing of the plurality of hardware resources related to the image formation, and a storage device
15 storing rewritable shared data which is used by the plurality of application programs in common, the method comprising the steps of:

20 selecting any of the plurality of application programs as destinations of updating-start notification and notifying a start of updating of the shared data to the selected application programs when acquisition and updating of the shared data is inhibited in response to a write-lock request received from one of the plurality of application programs; and

25 notifying an end of the updating of the shared data to the selected application programs when the acquisition and updating of

the shared data is allowed in response to an unlock request received from said one of the plurality of application programs.

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31. A shared data management method for an image forming apparatus which includes a plurality of hardware resources provided to carry out image formation, a plurality of application programs 10 performing respective processing of the plurality of hardware resources related to the image formation, and a storage device storing rewritable shared data which is used by the plurality of application programs in common, the method comprising the steps of:

15 inhibiting, prior to receiving inputs of an operator into one of the plurality of application programs, acquisition and updating of the shared data by other application programs than said one of the plurality of application programs;

20 notifying a start of updating of the shared data by said one of the plurality of application programs to the plurality of application programs;

allowing the acquisition and updating of the shared data in response to an unlock request received from said one of the plurality of application programs; and

25 notifying an end of the updating of the shared data by said one

of the plurality of application programs to the plurality of application programs.

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32. A shared data management system including at least one external network device and an image forming apparatus connected to said at least one external network device via a network, and 10 performing management of shared data used by the image forming apparatus, the image forming apparatus comprising:

a plurality of hardware resources provided to carry out image formation;

15 a plurality of application programs performing respective processing of the plurality of hardware resources related to the image formation;

a storage device storing rewritable shared data which is used by the plurality of application programs in common; and

20 a shared-data control unit suspending one of a write-lock request or a read-lock request that is received from one of the plurality of application programs when acquisition and/or updating of the shared data is inhibited, and after the acquisition and/or updating of the shared data is allowed the shared-data control unit inhibiting the acquisition and/or updating of the shared data by other 25 application programs than said one of the plurality of application

programs in accordance with the suspended one of the write-lock request or the read-lock request for said one of the plurality of application programs.

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33. A shared data management system including at least one external network device and an image forming apparatus connected 10 to said at least one external network device via a network, and performing management of shared data used by the image forming apparatus, the image forming apparatus comprising:

a plurality of hardware resources provided to carry out image formation;

15 a plurality of application programs performing respective processing of the plurality of application programs related to the image formation;

a storage device storing rewritable shared data which is used by the plurality of application programs in common; and

20 a shared-data control unit selecting any of the plurality of application programs as destinations of updating-start notification and notifying a start of updating of the shared data to the selected application programs when acquisition and updating of the shared data is inhibited in response to a write-lock request received from 25 one of the plurality of application programs, and the shared-data

control unit notifying an end of the updating of the shared data to the selected application programs when the acquisition and updating of the shared data is allowed in response to an unlock request received from said one of the plurality of application programs.

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34. A shared data management system including at least one
10 external network device and an image forming apparatus connected to said at least one external network device via a network, and performing management of shared data used by the image forming apparatus, the image forming apparatus comprising:

15 a plurality of hardware resources provided to carry out image formation;

a plurality of application programs performing respective processing of the plurality of hardware resources related to the image formation;

20 a storage device storing rewritable shared data which is used by the plurality of application programs in common; and

25 a shared-data control unit inhibiting, prior to receiving inputs of an operator into one of the plurality of application programs, acquisition and updating of the shared data by other application programs than said one of the plurality of application programs, notifying a start of updating of the shared data by said one of the

plurality of application programs to the plurality of application programs, and

the shared-data control unit allowing the acquisition and updating of the shared data in response to an unlock request received
5 from said one of the plurality of application programs, and notifying an end of the updating of the shared data by said one of the plurality of application programs to the plurality of application programs.

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